Environment Canada Environnement Canada

ENVIRONMENT CANADA'S

INFORMATION REQUEST RESPONSES

RESPECTING THE

INUVIK TO TUKTOYAKTUK HIGHWAY, NWT

EIRB FILE NO. 02/10-05

Submitted to the
Environmental Impact Review Board
Inuvik, NT

March 30, 2012

Canada

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1.0 INTRODUCTION

Environment Canada (EC) is pleased to provide the following responses to the Environmental Impact Review Board's (EIRB) second round of Information Requests dated March 8, 2012. EC responses are included after each information request.

1.1 Mandate, Role and Responsibilities of Environment Canada

The mandate of EC is determined by its own departmental statute, the *Department of the Environment Act* (DOE Act), and the legislation assigned to it by Parliament through the Minister. In delivering this mandate, the Department is also responsible for the development and implementation of policies, guidelines, codes of practice, federal, territorial, and international agreements, and related programs. The overall objective is to foster harmony between society and the environment for the economic, social and cultural benefit of present and future generations of Canadians. The Department shares this goal with other federal agencies, provinces, territories and First Nations.

The DOE Act provides EC with general responsibility for environmental management and protection. Its obligations extend to and include all matters over which Parliament has jurisdiction, which have not by law been assigned to any other department, board, or agency of the Government of Canada. The DOE Act delegates responsibility to the Minister for:

- preservation and enhancement of the quality of the natural environment (e.g. water, air, soil);
- renewable resources including migratory birds and other non-domestic flora and fauna;
- water;
- meteorology; and
- coordination of federal policies and programs respecting preservation and enhancement of the quality of the natural environment.

The DOE Act states that EC has a mandated responsibility to advise heads of federal departments, boards and agencies on matters pertaining to the preservation and enhancement of the quality of the natural environment. As such, this mandate is extremely broad.

Of particular applicability to the current project proposal and binding on the Proponent, if the project proposal proceeds, are legislation and standards such as:

- *Canadian Environmental Protection Act, 1999* (CEPA) and its Regulations
- *Fisheries Act* (i.e. Pollution Prevention Provisions)
- *Migratory Birds Convention Act* (MBCA) and its Regulations
- *Species at Risk Act* (SARA)

Please see Appendix A for a brief description of the above instruments.

2.0 CUMULATIVE EFFECTS

2.1 IR Number: 77

Source: MSES Inc.

To: Wildlife Management Advisory Council (WMAC), FJMC, GNWT ENR, DFO & EC

Subject: Cumulative effects assessment – induced effects and increased access (EIS section 5.3.1.2, p. 631; IR Response Round 1, IR #51)

Preamble

The Developer acknowledges that it anticipates the completed Highway will make it easier for people to access the land for their various traditional, recreational and cultural pursuits. The Developer points out that to ensure that the environment of the area remains protected, it will be important for the users of the Highway to abide by any "management restrictions" they may need to be developed for the Highway by the resource management agencies and co-management bodies in consultation with the Hunters Trappers Committees (HTCs) and other interested stakeholders. The Developer has not defined what those anticipated "management restrictions" might be in the EIS. It is not clear how these potential induced environmental impacts through increased access (i.e. increased harvesting of wildlife, potential damage to vegetation, increased random camping, etc.) were quantitatively factored into the cumulative effects assessment.

Request

2.1.1 Please describe and explain the anticipated "management restrictions" that may need to be developed for the Highway.

2.1.2 Please indicate when "management restrictions" will be developed, whether they will be in place prior to Highway completion and who will be responsible for implementation and enforcement.

2.1.3 Please explain and justify how "management restrictions" will be evaluated in terms of their relative success at minimizing or eliminating environmental impacts.

EC Response 2.1.1 (IR 77.1):

EC will provide advice and expertise to the Inuvialuit Land Administration for the establishment of management restrictions on Inuvialuit Lands as required. As a member of the Wildlife Management Advisory Council (NWT), EC will also provide advice and expertise as requested/required for the establishment of any management restrictions on federal crown land within the Inuvialuit Settlement Region (ISR).

In general, the Canadian Wildlife Service of EC (herein known as EC-CWS) can provide expert advice and information relating to migratory birds and federally listed, or COSEWIC assessed, species at risk to assist in the design of any management restrictions that may need to be developed for the proposed Highway. Such management restrictions could include measures such as implementing a no-hunting corridor along the highway. Specific conditions could also be developed to allow continued use of areas currently identified as being important for traditional, recreational and cultural pursuits. Any management restrictions on hunting along the highway corridor would also need to take issues of public safety into account.

Although EC-CWS could consider management restrictions such as applying harvesting restrictions on migratory birds within certain areas along the highway corridor, EC-CWS

does not currently see the need for additional restrictions on hunting migratory birds along the proposed highway corridor.

EC Response 2.1.2 (IR 77.2):

EC acknowledges that discussion among interested parties of potential management restrictions should begin prior to construction of the highway so that they can be implemented when the highway becomes operational.

EC Response 2.1.2 (IR 77.3):

The success of management restrictions could be evaluated through follow-up monitoring programs during the operation of the highway. Such monitoring programs could include an evaluation of damage to vegetation from use of off-road vehicles within areas where such activities are restricted, and inspection or surveillance programs along the highway corridor for detection of activities that are not permitted in restricted zones. The party responsible for carrying out such programs and enforcing management restrictions will need to be determined.

2.2 IR Number: 78

Source: MSES Inc.

To: GNWT ENR, EC & AANDC

Subject: Cumulative Effects Management – Regional Initiatives (EIS section 5.4.1, p. 643 and Table 5.4.1-1, p. 644 and IR Response Round 1, IR #53.1 and #53.2, p. 130)

Preamble

When asked in IR #53.1 to explain how the Developer's participation in regional initiatives will assist in the management of cumulative effects for the development, the Developer responded:

"*The GNWT Department of Transportation acknowledges that its departmental role in regional cumulative management is limited to its departmental mandate. The Developer is directly responsible for constructing public highways and maintaining these highways after completion. The department does engage with other agencies in research activities (for example, the effects of highways on permafrost) or vice versa that relate to management of these public assets. For this project, the role of the Developer will be to engage with other GNWT departments with mandates for effects management as requested. At this time, the Developer is committed to providing information collected in the planning and operations phases of this project to those departments or agencies or other developers that will aid them in their management activities (IR Responses #53.1, p. 130).*"

Request

2.2.1 Please explain how AANDC, ENR, and Environment Canada will engage the Developer with respect to cumulative effects management in the context of the proposed project.

2.2.2 Please provide examples of tangible results from other developments for cumulative effects regional initiatives in the ISR and/or the Northwest Territories.

EC Response 2.2.1 (IR 78.1):

Although the project is subject to a substituted panel process being conducted by the EIRB, EC strives to meet all requirements of Section 16 of the Canadian Environmental Assessment Act which, in part, states:

"16. (1) Every screening or comprehensive study of a project and every mediation or assessment by a review panel shall include a consideration of the following factors:

> *(a) the environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out; …"*

In this context, EC will engage the developer, as appropriate, at all stages of the review process to ensure potential impacts in all areas of EC's mandate (e.g. migratory birds, species at risk, water quality) are identified, appropriately considered and mitigation is applied where/as required. This includes reviewing the Developer's project specific and cumulative effects assessments as presented in the EIS and supplementary documents/ information and providing specialist expert advice as necessary to eliminate, reduce and/or mitigate potential residual impacts. Furthermore, EC can assist the Developer in further developing their cumulative effects assessment by providing the Developer with expert advice on migratory birds and Species at Risk for which EC has a management responsibility, along with any existing data that EC has on the distribution and abundance of such species along the proposed highway corridor and within the cumulative effects study region identified by the Developer. EC can also provide advice on the design of any follow-up monitoring programs for migratory birds and species at risk to detect cumulative effects should they be deemed necessary.

EC Response 2.2.2 (IR 78.2):

EC participates in a number of initiatives which assist in the assessment, monitoring and management of cumulative impacts in the ISR including: the screening and environmental assessment review processes conducted under CEAA and by the EISC and EIRB; various research initiatives; the Cumulative Impact Monitoring Program (CIMP); Community Conservation Plans (CCPs); and, regional planning initiatives including most recently the Beaufort Regional Environmental Assessment (BREA).

<u>CIMP</u>

The CIMP has conducted a "pilot project" in the ISR in recent years. As Aboriginal Affairs and Northern Development Canada (AANDC) is the Responsible Authority for the program

and the lead federal department, we limit our comments to describing EC's role in the program in general.

EC's official status in CIMP is "Observer". Although in practice EC functions much like a Working Group member, the department does not take part in decision-making. That role is reserved for full Working Group member organizations. EC's role is advisory in nature.

EC contributes by advising on the selection of valued components (VC's), indicators and monitoring protocols, by reviewing and commenting on various program related documents, and reviewing monitoring project proposals. Monitoring projects sponsored and/or conducted by EC have received support from the CIMP program in the past.

CCPs

EC considers the Inuvialuit Community Conservation Plans (CCPs) primary instruments for the management of cumulative impacts in the ISR. The CCPs for Tuktoyaktuk and Inuvik state that:

> *"Successful management of cumulative impacts involves the following three steps:*
> - *Clearly identify the type of environment and lifestyle you want in the future;*
> - *Monitoring environmental change; and*
> - *Appropriate decision making."*

Specifically, Section 4.3 of these plans states:

> *"In order to better account for incremental or gradual losses of wildlife habitat resulting from changes in land use over time, the Community, as represented by the HTC and Tuktoyaktuk Community Corporation, will re-designate areas of remaining habitat in a given land use category (Category A, B, C, D) to a more protective category (Category B, C, D, E) in proportion to the amount of effective habitat lost or affected by the authorized land use. For example, if a proposed land use has negative effects on five percent of Category A wildlife habitat, then five percent (or any other amount) of what Category A habitat remains would be re-designated Category B or higher until such time as the impact of the land use has stopped and the land restored to its original ecological productivity. This process acknowledges the principle that as wildlife habitat is lost, that which remains becomes more valuable and should require greater public support to alter. Re-designation will be carried out coincident with the two-year conservation plan review by the Community Working Group, and the complete review by all stakeholders every four years."*

EC-CWS participates in the review of CCPs and provides input and advice relevant to a number of issues/concerns, including cumulative effects, during these reviews.

BREA

BREA is a regional initiative lead by AANDC. Member organizations include federal departments, territorial governments, Inuvialuit and industry. Its stated purpose and goals are:

> *Purpose*
> *To have Inuvialuit communities, industry, governments and regulators well prepared for oil and gas activity in the Beaufort Sea by:*
> - *Filling regional information and data gaps related to offshore oil and gas*

exploration and development activities

- *Supporting efficient and effective regulatory decision making by providing scientific and socio-economic information to all stakeholders*

Goals

- *To produce relevant regional environmental and socio-economic information that simplifies project-level environmental assessment and regulatory decision-making for oil and gas activities, while strengthening the relationship between environmental assessment and integrated planning and management in the region*
- *To engage communities and advance their priorities for oil and gas preparedness.*

EC is represented and actively participates at all levels of BREA governance, including the Steering Committee and Research Advisory Committee. In addition, EC participates in, leads, or co-leads four of the six existing BREA Working Groups including; climate change, waste management, spill preparedness and response, and cumulative effects. EC staff from several divisions will be overseeing or conducting research supported by the BREA research program.

Environmental Studies Research Fund (ESRF)

The ESRF is a research program which sponsors environmental and social studies. It is designed to assist in the decision-making process related to oil and gas exploration and development on Canada's frontier lands. Frontier lands, defined as those areas where Canada has the right to exploit the natural resources, are situated in the offshore areas of Canada's East and West Coasts and the areas north of 60 Degrees. The funding for the ESRF is provided through levies paid by interest holders of frontier lands such as the oil and gas companies.

EC is represented at all levels of ESRF governance including Management Board and Northern Advisory Committee. EC staff, representing various divisions of the department is engaged in ESRF as principal or co- researchers and/or members of Technical Advisory Groups.

Migratory Bird Monitoring Programs

Several operating mines in the NWT and NU participate in regional migratory bird monitoring programs such as the North American Breeding Bird Survey, the Program for Regional and International Shorebird Monitoring (PRISM) and the NWT/NU Bird Checklist program. Data generated by these initiatives contribute to regional data sets that can be used to assess cumulative effects to migratory birds at broad spatial scales.

3.0 FOLLOW-UP AND MONITORING

3.1 IR Number: 80

Source: MSES Inc.

To: Wildlife Management Advisory Council (WMAC), FJMC, GNWT ENR, DFO & EC

Subject: Environmental Management Plans and Effects Monitoring (IR Responses Round 1, IR# 11, 16, 55, 61, 62, 63, and 66)

Preamble

In the response to IR #55, the Developer presents its commitments (Table F) to a number of mitigations measures. However, the Developer does not respond to the question about how the mitigation would address the potential effects of the ITH. Only at the end of the Table F the Developer briefly refers to an "effects monitoring table". However, it is unclear how such a table would satisfy the requirement for the testing of impact predictions, developing significance thresholds, and determining adaptive measures. As per the Canadian Environmental Assessment Agency's (CEAA 2009) *Operational Policy Statement, Adaptive Management Measures* under the *Canadian Environmental Assessment Act*, it is imperative to understand how and when, in relation to the construction schedule, effects monitoring programs will be developed.

Under the Operational Policy of CEAA, **compliance monitoring on its own does not satisfy the requirements for a follow-up program.** Compliance monitoring also does not adhere to the GNWT's (2006a) position statement which requires that *monitoring and reporting programs* need to be *designed to test impact predictions*. Moreover, the CEAA operational policy states: "**If project implementation is likely to begin shortly after approval, the follow-up program should be fully designed and a reliable baseline established during the environmental assessment phase of the project."**

The Developer's response to IRs 11, 16, 61, 62, 63, and 66 are similarly deficient in clarifying how adaptive management measures will be developed in light of CEAA's policy.

Request

For each resource and regulatory agency, please clarify your agency's role in developing an effects monitoring and an adaptive management program. Please identity:

3.1.1 Which programs you anticipate to review and approve as part of your agencies mandate.

3.1.2 What regulatory tools are available to your agency, to ensure that both compliance and effects monitoring would be in place to ensure that the effects on any given valued component will be at or below the effects predicted in the EIS.

3.1.3 How your agency would ensure that the above programs would be designed and implemented prior to construction.

EC Response 3.1.1 (IR 80.1):

EC will review the following plans/programs as identified in the Proponent's IR Responses, Round 1, IR #55, Table F and will review any other plans/programs identified through this process that would be reviewed as part of EC's mandate:

- Environmental Management;
- Spill Contingency;

- Erosion and sediment control;
- Wildlife management;
- Waste management; and
- Hazardous waste management.

EC will conduct its reviews with the goal to provide specialist expert knowledge and advice, as available and appropriate, in areas of departmental mandate.

As EC will not be required to provide any permits, licences or authorizations with respect to the project and is not a Responsible Authority under CEAA in this instance, the department will not be in a position to approve the above noted plans and/or programs.

EC Response 3.1.2 (IR 80.2):

As EC will not be required to provide any permits, licences or authorizations with respect to the project and is not a Responsible Authority under CEAA in this instance, the department will not be in a position to ensure, through its own legislation, that the effects on any given valued component will be at or below the effects predicted in the EIS. However, EC has had some success in having its recommended mitigation and monitoring approaches voluntarily adopted by proponents and/or incorporated into land use permits, water licences and environmental agreements.

EC-CWS will review and provide advice on any proposed wildlife baseline data collection programs and effects monitoring plans produced by the Developer. EC-CWS can also review and provide feedback on monitoring reports generated by the wildlife effects monitoring program.

With respect to prohibitions set out in the *MBCA, MBR and SARA* (see Appendix A), it is the Developer's responsibility to ensure that they remain in compliance with the MBCA and the SARA at all times.

EC Response 3.1.3 (IR 80.3):

Under Section 38 of CEAA, RAs must design and ensure the implementation of a follow-up program. Follow-up programs are defined in Section 2 of CEAA to be programs for

(a) verifying the accuracy of the environmental assessment of a project and
(b) determining the effectiveness of any measures taken to mitigate the environmental effects of the project.

Follow-up programs may include aspects of compliance or effects monitoring that enable an understanding of the environmental performance of the project and allow for ongoing adaptive management to adjust to construction and operation effects of the project as they occur.

EC is of the view that follow-up programs are essential to ensuring that uncertainties about the impacts of projects are addressed and mitigation measures are effectively implemented. Monitoring is the means for gathering the information necessary for implementing follow-up programs and knowing when to apply adaptive management.

EC would expect that the proponent, the RAs and other relevant regulators would work together with FAs and others to effectively ensure that required follow-up programs

adequately reflect the needs of all participants. Programs would be designed and implemented prior to construction pursuant to approvals, conditions and provisions of Environmental Management Plans and Programs such as those listed above.

EC has experienced some success with other projects (e.g. diamond mines) in having some of its recommendations on monitoring and follow-up implemented through land use permits, water licences and environmental agreements. A thorough discussion on EC's recommended approach to follow-up for large projects in the NWT can be found in EC's Topic 14a Submission to the Mackenzie Gas Project Joint Review Panel (JRP) (Monitoring and Follow-up Programs, MGP JRP Exhibit # J-EC-00147, May 2007, page1-5). This is also consistent with the Canadian Environmental Assessment Agencies 2009 "Operational Policy Statement on Adaptive Management Measures under the Canadian Environmental Assessment Act".

EC will review any draft plans submitted by the Developer and EC-CWS would be pleased to meet with the Developer and any other relevant parties to further discuss the design of Wildlife Management Plans for the project prior to construction of the highway.

Because EC will not be issuing any permits for this project, EC will have to rely on other regulatory agencies to ensure that effects monitoring and adaptive management programs are implemented prior to construction.

4.0 WORST CASE SCENARIO

4.1 IR Number: 89

Source: EISC

To: AANDC, DFO, & EC

Subject: Worst Case Scenario (EIS, Section 4.4.5 p. 614-622, IR Response Round 1 IR#69)

Preamble

The Inuvialuit Final Agreement (IFA) in paragraph 13(11)(b) requires that developers provide evidence to enable an estimate of "the potential liability of the developer, determined on a worst case scenario". This is *in addition* to evidence about both actual and future wildlife harvest loss which may result from a worst case scenario. Inuvialuit have a right to compensation for both actual and future harvest loss based on section 13(15) of the IFA. Further the IFA specifies that where there is more than one developer they are jointly and severely liable. The IFA also sets out that future harvest loss includes damages to habitat and disruption of future harvesting activities.

The EIS did not provide an estimate of total clean up costs of the proposed worst case scenario. The estimate of liability in the EIS is based only on losses (or replacement value) of fish and some fishing gear for one season and does not address impacts on fish habitat or the effects of a spill on future Inuvialuit harvesting in the affected area or future harvest losses if Inuvialuit harvesters avoid the effects area in the future. Answer IR 69.2 provides an estimate of costs for a 5 day and a 10 day spill response event and the costs of monitoring.

Request

4.1.1 Please review and comment on the Developer's explanation of the likely fate of diesel spilled in the worst case scenario as set out in the EIS.

4.1.2 Please evaluate the impact of the worst case scenario on the fish and migratory bird habitat and populations in the streams, water courses and Husky Lakes. Provide an estimate of the cost of remediating these affected habitats.

4.1.3 Please provide a critical evaluation of the estimated costs for cleaning up the fuel spilled under the worst case scenario.

EC Response 4.1.1 (IR 89.1):

The fate and effects of a spill are determined by the type of oil and the environmental conditions at the time of the spill. Diesel products can cause significant harm to aquatic life. Birds, particularly, waterfowls, may be affected externally and internally by oil contamination.

The Developer's explanation of the fate of a diesel spill is consistent with the NOAA FACT SHEET: Small Diesel Spills (500-5000 gallons) for spill response. Using the NOAA reference the following information should have also been included:

- In terms of toxicity to water-column organisms, diesel is considered to be one of the most acutely toxic oil types. Fish, invertebrates, and seaweed that come in direct contact with a diesel spill may be killed. However, small spills in open water are so rapidly diluted that fish kills have never been reported. Fish kills have been reported for small spills in confined, shallow water (NOAA).
- Experience over the last 10 years in Alaska, with hundreds of small diesel spills, is that few birds are directly affected by diesel spills from fishing vessels. However, small spills could result in serious impacts to birds under the "wrong" conditions, such as a grounding right next to a large nesting colony or transport of sheens into a high bird concentration area (NOAA)

EC Response 4.1.2 & 4.1.3 (IR 89.2 & 89.3):

EC (Emergencies Program) does not have a methodology for estimating oil spill costs, including response costs and environmental and socioeconomic damages, for actual or hypothetical spills. The Developer would have to quantify *relative* damage and cost for different spill types and incorporate spill-specific factors that influence costs – spill amount; oil type; response methodology and effectiveness; impacted medium; location-specific socioeconomic value, freshwater vulnerability, habitat/wildlife sensitivity; and location type. Including these spill-specific factors to develop cost estimates provides greater accuracy in estimating oil spill costs than universal per-gallon figures. Response effectiveness can also be specified, allowing for analysis of potential benefits of response improvements.

EC's National Policy on Oiled Birds and Oiled Species at Risk (2000) clarifies the role of EC-CWS in response to oil spills[1]. In the event of a spill, EC-CWS generally provides advice and information to the lead agency responding to a spill in order to prevent further damage to wildlife and to ensure humane treatment of oiled wildlife. EC-CWS may become involved in documenting wildlife and wildlife habitat damage and socio-economic impacts accurately for restoration plans, legal action, claims from court damage awards or insurance companies and pollution funds. EC-CWS may recommend and advise on monitoring programs to assess the long term impacts on bird and species at risk populations and their habitats and ecosystems. In cooperation with other government agencies with jurisdiction, EC enforcement officers may initiate investigations which could support subsequent prosecution of a polluter.

The Developer presented a worst case scenario of a diesel fuel spill of >10,000 L into an open water course during spring freshet that flows into the Husky Lakes. In order to provide an assessment of potential impacts of a worst case scenario fuel spill on migratory bird habitat and populations, EC would require more specific details on the exact time, location, and spatial boundaries of the spill zone as well as prior knowledge of migratory bird species distribution and abundance within the affected area. As such EC cannot provide estimates for habitat damage, population impacts or remediation costs based on the hypothetical worst case scenario currently described in the Developer's EIS.

5.0 ADEQUACY OF COMMITMENTS

5.1 IR Number: 123

Source: GNWT

To: EC

Subject: Adequacy of Commitments

Preamble

The EIRB requested a complete list of all general and specific mitigation measures and commitments which the Developer provided in its Response to IR 55.1. The GNWT agrees that the mitigation measures are a crucial aspect of ensuring adverse effects are avoided or minimized. However, to be fully applicable in regulatory processes, environmental and topic specific management plans, these commitments should be specific, measurable, attainable, relevant and trackable. To ensure the most appropriate wording is on record for discussion in technical sessions or public hearing, it is important for expert departments to provide feedback on the adequacy of the working of mitigations and commitments to improve and identify missing mitigations or commitments early in the environmental assessment process.

Request

5.1.1 Please review the relevant general and specific mitigation measures provided by the Developer in IR Response 55.1 Table F and identify and

[1] Canadian Wildlife Service. 2000. National Policy on Oiled Birds and Oiled Species at Risk. Avalable at:
http://www.ec.gc.ca/ee-ue/default.asp?lang=En&n=88C0D62B

confirm the adequacy of the wording of the mitigation measures of provide editorial suggestions to improve the wording to ensure the commitments are specific, measurable, attainable, relevant and trackable.

5.1.2 Please identify and provide wording for additional mitigation measures require to ensure the avoidance or minimization of Project impacts.

EC Response 5.1.1 & 5.1.2 (IR 123.1 & 123.2):

Commitments made during the course of this environmental assessment may help to improve the project design as well as mitigate and monitor potential impacts of the development on the biophysical and socio-economic environment. The commitments tables should reflect the information contained in the Environmental Impact Statement (EIS), supporting documents as well as any additional commitments made by the Developer over the course of the environmental assessment process including the Responses to Information Requests, Technical Sessions, Community Meetings and the final hearings. The commitments table should be a stand alone document, with sufficient detail, that it can be used over the life of the project as a record of all the relevant design considerations, mitigation measures, monitoring plans necessary to ensure the project does not cause significant adverse effects. The comments provided below are specific to Table F in the Developer's IR response # 55.1 with the understanding that over the course of the remainder of the EA, commitments may need to be added or refined. Parties should be given the opportunity to comment on the final commitments table prior to the closing of the public registry. EC notes that adequacy of many of the commitments will depend on the level of detail presented in relevant management plans and follow-up to ensure that management plans are implemented.

EC-CWS has reviewed and provided comments on general and specific commitments that are relevant to migratory birds and species at risk for which EC-CWS has management responsibility and expertise. EC expects that the GNWT-ENR will provide expert advice and feedback on commitments and mitigation measures for wildlife species, including species at risk, that are under territorial management (e.g. caribou, grizzly, wolverine, Peregrine Falcon, Short-eared Owl, Rusty Blackbird).

Comments and suggested edits for individual commitments are summarized in the following table:

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
SOCIO-ECONOMIC	
The Developer is committed to observing the relevant economic measures of the Inuvialuit Final Agreement (IFA).	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer is committed to preferential employment opportunities for qualified local residents and contractors.	Did not review - Outside of Environment Canada's mandated responsibilities

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
The IFA guidelines for business operation will apply to this Project, giving priority hiring to companies included on the Inuvialuit Business List.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer and on-site Project contractors will be responsible for the implementation of focused socioeconomic measures, including recruitment and skills training.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will install educational signage related to harvesting, fishing, hunting, and responsible use of the Highway at appropriate and highly visible locations.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will require that its Project contractor(s) ensure that all heavy equipment operators are suitably trained in proper machinery maintenance and operation; that equipment is regularly inspected and serviced; and that contractor staff obey posted Highway rules (e.g., speed limits, hunting/fishing restrictions).	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will require that its contractor(s) educate their staff on the prevention of accidents and malfunctions. The training received will be outlined for the Developer, including emergency spill response.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer commits to ensuring that its contractor(s) have Health, Safety and Environment (HSE) manuals; work procedures documents; and site-specific health and safety plans.	Did not review - Outside of Environment Canada's mandated responsibilities
PLANNING AND DESIGN	
The Developer is responsible for the design and construction of the Highway, including field studies and data collection during Highway design and construction, and future operations funding, similar to other NWT highways.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will conform to the IFA and the Tuktoyaktuk and Inuvik Inuvialuit Community Conservation Plans (CCPs) and will integrate the goals of these documents into the Project's environmental management.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will undertake further engineering, environmental and archaeological studies in areas scheduled for construction during that same year.	Did not review - Outside of Environment Canada's mandated responsibilities

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
The Developer is committed to addressing the performance criteria and management goals identified in the ILA's draft Husky Lakes Special Cultural Area Criteria, pending approval.	Did not review - Outside of Environment Canada's mandated responsibilities
On approval of the Highway, the Developer commits to further consider Alternative 3 (2010 Minor Realignment) as the final alignment for the Highway.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer commits to using, as a guideline, the design parameters and construction techniques in the Transportation Association of Canada (TAC 2010) *Development and Management of Transportation Infrastructure in Permafrost Regions*. This will include mitigation strategies such as: -Accessing and hauling from borrow sources during the winter months; -Constructing embankments during the winter months; -Conducting summer construction activities (such as grading and compacting the embankment, and placing of surfacing materials) only when the Highway can be accessed over the embankment; -Stockpiling surfacing material along the embankment during the winter for use in the summer; -Minimizing the surface area of open cut; -Grading slopes to minimize slumping; -Grading material storage and working areas to promote drainage ; -Reclaiming borrow sources when construction is complete by grading slopes to blend with the natural topography and drainage of the surrounding area; -Designing and constructing thick or high embankments to create an insulative layer that promotes the development of a frozen embankment core; -Designing the alignment to avoid unfavourable terrain, such as areas with thick organic deposits and ice-rich polygonal or patterned ground; -Installing culverts to manage seasonal overland flows; -Installing sufficient cross drainage during construction to prevent or minimize potential water ponding; and	Also add: -Applying appropriate erosion and sediment control BMPs for the construction of ditches and cross drainage channels Please note that erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. A long term Erosion and Sediment Control Plan should be developed. This plan should include the criteria used to assess the areas within the project site that are sensitive to erosion and/or sedimentation, and outline how issues identified will be proactively addressed in a timely manner.

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
-Inspecting and maintaining culverts, as needed, in the spring and fall.	
CONSTRUCTION	
The Developer and its contractors will adhere to all applicable legislation, regulations, guidelines, and terms and conditions.	The Developer and its contractors, including all field operations staff will adhere to and be made aware of all applicable legislation, regulations, guidelines, and terms and conditions.
The Developer and on-site Project contractors will implement the mitigation measures identified in this EIS.	The Developer and on-site Project contractors including all field operations staff will be made aware of and implement the mitigation measures identified in this EIS.
The Developer is committed to constructing the proposed Inuvik to Tuktoyaktuk Highway, borrow sources, and associated winter access roads in a safe and environmentally responsible manner.	The Developer is committed to constructing the proposed Inuvik to Tuktoyaktuk Highway, borrow sources, and associated winter access roads in a safe and environmentally responsible manner and to strictly adhering to any mitigation measures as proposed by the Developer.
The Developers and their contractors will meet the standards required for a safe work environment.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer commits to working towards achieving the Environmental Impact Review Board's goal statements for all phases of the proposed development.	Did not review - Outside of Environment Canada's mandated responsibilities
Blasting, if required, will occur only during winter borrow source development.	An explosives management plan should be developed should blasting be required. Treatment or alternative disposal of water containing blast residue from the water collected from the blasting areas, seepage through the temporarily stored blast rock and any washing of aggregates that have been exposed to blasting should be included in this plan. Only emulsion-type of stick-type explosives (non-ANFO) should be used for this project in or near water.
The Developer is committed to building the roadway with 3:1 side slopes.	No additional comments at this time.
The Developer will use winter roads to access borrow sources; permanent all-weather access roads will not be required.	No additional comments at this time.
The Developer is committed to performing the majority of the construction activities during the winter months.	No additional comments at this time.

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
BORROW SOURCES	
The Developer is committed to limiting the footprint of each borrow source and minimizing the number of borrow sources developed.	No additional comments at this time.
Borrow pits will be closed as soon as they are no longer required and reclaimed in a progressive manner, as described in the Pit Development Plan.	No additional comments at this time.
Pit Development Plans will conform to the approving authority's regulations and permitting requirements.	No additional comments at this time.
Pit Development Plans will include mitigation measures to address potential environmental concerns, and operational and reclamation plans. Mitigation measures include: -Developing borrow sources only during winter periods; -Maintaining an appropriate amount of undisturbed land between borrow source locations and any waterbody; and -Applying appropriate erosion and sediment control BMPs for the construction of ditches and cross drainage channels.	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. A long term Erosion and Sediment Control Plan should be developed. This plan should include the criteria used to assess the areas within the project site that are sensitive to erosion and/or sedimentation, and outline how issues identified will be proactively addressed in a timely manner. Under the Northern Land Use Guidelines Access for Pits & Quarries published by Aboriginal Affairs and Northern Development Canada (January 2010), it states the following: "the proponent should not excavate the pit or quarry below the water table and seasonal and storm-related fluctuations in ground water levels." The Proponent shall ensure that quarry activities do not result in the contamination of groundwater. Excavation and/or removal of material from the quarry should only take place to within one metre of the high water mark above the ground water table.
The Developer commits to ensuring that borrow source development is monitored by environmental monitors.	No additional comments at this time.
OPERATIONS	
The Developer, using local contractors, will be responsible for ongoing operation, maintenance, and safety of the Highway.	Did not review - Outside of Environment Canada's mandated responsibilities

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
The Developer will construct and operate the Highway to GNWT DOT standards and guidelines for public highways.	Did not review - Outside of Environment Canada's mandated responsibilities
Should the Mackenzie Gas Project proceed, the Developer will work with the Mackenzie Gas Developers to ensure that increasing traffic on the Highway is effectively managed.	Did not review - Outside of Environment Canada's mandated responsibilities
MANAGEMENT PLANS	
An Environmental Management Plan (EMP) will be prepared prior to construction, and will be submitted for regulatory approval prior to use. The EMP will clearly define expectations for compliance monitoring, responsibilities, requirements for training, and reporting.	No additional comments at this time.
The EMP will contain the following types of plans: -Environmental management; -Spill contingency; -Erosion and sediment control; -Pit development for borrow sources; -Fish and fish habitat protection; -Wildlife management; -Health and safety; -Waste management; -Hazardous waste management; and -Archaeological site(s) protection. Where necessary, the Developer and its contractor(s) will seek approval for the plans prior to use.	An Explosives Management Plan should be added to this list.
SPILL CONTINGENCY PLAN	
The Developer will require that Project contractors prepare spill contingency plans, outlining spill reporting, containment, and clean-up, in accordance with INAC's *Guidelines for Spill Contingency Planning* (1987).	Please note that the proponent may have a reporting requirement pursuant to the federal Canadian Environmental Protection Act, 1999 (CEPA 1999). To determine if hazardous substances fall within the Environmental Emergencies Regulations (E2) detailed information on the exact locations of all storage facilities, or any proposed locations, during construction and operational phases are required. Under Part 8, Environmental Emergencies Regulations of CEPA, 1999, an emergency plan is required of any person who owns or has charge, management or control of any of the regulated substances at or above the specified threshold quantities and that have a single largest container with a capacity equal to or exceeding the listed amount. E2 regulated substances are found in Schedule 1 of the *Environmental Emergency*

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
	Regulations. See the following links for details: • http://www.ec.gc.ca/ee-ue/default.asp?lang=En&n=E3A506F8-1 • http://www.ec.gc.ca/CEPARegistry/documents/regs/e2_FS.cfm Environmental Emergency Response Plans should include: a) An inventory of petroleum products, chemicals and other hazardous substances and associated storage facilities and locations to be used during construction and operations phases. b) Identification of resources (equipment and staff) to be on-site and/or available to respond to environmental emergencies. c) Procedures for responding to spills and releases including an incident reporting and notification system. d) A list of response organizations and their respective roles. e) Cleanup and disposal procedures for generated wastes. f) Monitoring and follow-up procedures to ensure that mitigative measures are effective. Environmental Emergency Response Plans should also address: g) The types of emergencies that might reasonably be expected to occur, including potential on-site and off-site consequences. h) Prevention (evaluation of risks), Preparedness (resources & training), Response (notification & mobilization of resources) and Recovery (assessment of damages and restoration of environment). i) Involvement of communities and stakeholders who may be impacted by an environmental emergency or involved in an emergency response. A spill contingency plan must be developed which includes prevention, preparedness and response. Copies of the spill plan must be made readily available on site, and all staff should be familiar with operational procedures in the event of a spill. The Spill Contingency Plan should: • assign responsibilities to company staff

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
	and/or contractors and outline a clear path of response; • provide a list of agencies / persons to be contacted in the event of a spill including their phone numbers, etc; • provide direction regarding response actions for spills on various types of terrain (e.g. spills on land, water, snow/ice, muskeg, etc.); • create and maintain a list and indicate location(s), both on and off site, of equipment available to be used in the event of a spill; • ensure an appropriate spill kit with absorbent material is located at all sites where fuel storage and transfer occurs; • ensure drip pans are utilized when refuelling equipment; ensure proper handling and disposal of contaminated materials resulting from the containment, clean-up, etc. of any spills; and state that **all spills** of oil, fuel, or other deleterious materials**, regardless of size**, are to be reported to the NWT 24-hour Spill Line 1-867-920-8130.
The Developer will ensure that the Project contractor has appropriate spill response equipment on-site.	A spill contingency plan must be developed which includes prevention, preparedness and response. Copies of the spill plan must be made readily available on site, and all staff should be familiar with operational procedures in the event of a spill. The Spill Contingency Plan should: • assign responsibilities to company staff and/or contractors and outline a clear path of response; • provide a list of agencies / persons to be contacted in the event of a spill including their phone numbers, etc; • provide direction regarding response actions for spills on various types of terrain (e.g. spills on land, water, snow/ice, muskeg, etc.); • create and maintain a list and indicate location(s), both on and off site, of equipment available to be used in the event of a spill; • ensure an appropriate spill kit with absorbent material is located at all sites where fuel storage and transfer occurs; • ensure drip pans are utilized when refuelling equipment;

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
	• ensure proper handling and disposal of contaminated materials resulting from the containment, clean-up, etc. of any spills; and state that **all spills** of oil, fuel, or other deleterious materials**, regardless of size**, are to be reported to the NWT 24-hour Spill Line 1-867-920-8130.
The Developer's contractors will report all spills greater than 5 litres to the GNWT Spill Line and other appropriate agencies.	**All spills** of oil, fuel, or other deleterious materials**, regardless of size**, are to be reported to the NU / NWT 24-hour Spill Line (867) 920-8130. All releases of harmful substances, regardless of quantity, are immediately reportable where the release: – is near or into a water body; – is near or into a designated sensitive environment or sensitive wildlife habitat; – poses an imminent threat to human health or safety; or – poses an imminent threat to a listed species at risk or its critical habitat.
In the event of a spill, the Developer's contractors will respond according to the site-specific spill contingency plan and the contractor's HSE manual and procedures.	No additional comments at this time.
The Developer will develop and implement an erosion and sedimentation control plan as part of the EMP. The plan will comply with appropriate erosion and sediment control guidelines, GNWT best management practices (currently being prepared in coordination with DFO), and measures outlined in the DFO (1993) *Land Development Guidelines for the Protection of Aquatic Habitat*. Some measures that will be followed include: -Limiting the use of construction equipment to the immediate footprint of the Highway or borrow source; -Minimizing vegetation removal and conducting progressive reclamation at the clear-span abutments, culvert installations and borrow sources; -Keeping ice bridge and ice road surfaces free from soils and fine gravel that may be tracked out by vehicles; -Avoiding the use of heavy equipment in streams or on stream banks during summer months, and the adherence to the DFO *Operational Statement for Temporary Stream Crossings* (DFO 2008), where this is deemed necessary;	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. A long term Erosion and Sediment Control Plan should be developed. This plan should include the criteria used to assess the areas within the project site that are sensitive to erosion and/or sedimentation, and outline how issues identified will be proactively addressed in a timely manner.

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
-Installing silt fencing and/or checking dams, and cross drainage culverts as necessary to minimize siltation in runoff near waterbodies; and -Appropriately sizing and installing culverts, based on hydrological assessments and local experience, to avoid backwatering and washouts.	
The Developer commits to ensuring that any exposed areas will be suitably stabilized prior to the spring thaw period.	No additional comments at this time.
The Developer is committed to using heavy equipment during Highway embankment construction through the winter months when all watercourse crossing locations are frozen.	No additional comments at this time.
FISH AND FISH HABITAT	
No instream work will occur in fish bearing streams during critical time periods.	Did not review - Outside of Environment Canada's mandated responsibilities
Where critical fish habitat cannot be avoided, mitigation will be incorporated into the design.	Did not review - Outside of Environment Canada's mandated responsibilities
Individual site-specific circumstances might preclude complete adherence to DFO Operational statements. In such cases, DFO will be consulted in advance to discuss and approve of proposed plans, which will include mitigation measures necessary to prevent or minimize effects.	Did not review - Outside of Environment Canada's mandated responsibilities
In accordance with DFO (2009a), the installation of culverts in fish bearing streams will not permitted between April 1 and July 15 for watercourses that provide habitat for spring/summer spawners.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will consider, at a minimum, stream category when determining the type of structure to be placed at stream crossings.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will develop and implement a fish and fish habitat protection plan in consultation with DFO that will include mitigation measures such as: -Designing appropriate crossing structures based on site conditions; -Completing primary construction activities during winter months; -Applying erosion and sediment control	Did not review - Outside of Environment Canada's mandated responsibilities

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
measures and best practices -Minimizing riparian disturbance (footprint); -Following the DFO *Operational Statement for Clear-span Bridges* (DFO 2009b) where appropriate; -Placing abutments at a sufficient distance from active stream channels; -Employing best management practices for culvert installation; Annually monitoring for culvert subsidence or lifting; -Constructing in non-fish bearing streams during winter; -Sizing culverts appropriately based on hydrological assessments and local experience; -Maintaining equipment away from waterbodies; -Having on-site spill containment equipment and operators trained to handle spills; Reported spills will be contained by trained maintenance crews; -Maintaining a sufficient buffer of undisturbed land between borrow sources and waterbodies; -Following DFO *Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters* (Wright and Hopky 1998); -Following DFO (2010) *Protocol for Winter Water Withdrawal in the Northwest Territories*; -Allowing filtration by natural vegetation; -Installing silt fences at each road-stream intersection; -Building regularly spaced cross-drainage culverts; -Following the DFO *Operational Statement for Culvert Maintenance* (DFO 2009b) where applicable; -Applying spill response measures according to an approved spill contingency plan -Creating and enforcing Regulations or guidelines on fish harvest by FJMC with input from DFO, local fisherman and Hunters and Trappers Committees; -Posting signage at regular, visible intervals on Highway; -Constructing or installing stream crossing structures to avoid the impingement of active stream channels; -Effectively suppressing dust (i.e., through the use of water trucks) during the dry season; and -Following the recommendations of the Water	

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
License (once approved)	
WILDLIFE AND WILDLIFE HABITAT	
General	
The Developer will develop and implement species specific Wildlife Management Plans (WMP) that will include specific mitigation measures for Species at Risk, caribou, grizzly bears, moose, furbearers, and birds.	Prior to construction, the Developer will develop and implement species specific Wildlife Management Plans (WMP) that will include specific mitigation measures for Species at Risk, caribou, grizzly bears, moose, furbearers, and birds. EC expects that the GNWT-ENR will provide expert advice and feedback on commitments and mitigation measures for wildlife species, including species at risk, that are under territorial management (e.g. caribou, grizzly, wolverine, Peregrine Falcon, Short-eared Owl, Rusty Blackbird).
The Developer or its contractor(s) will develop Bear Safety Guidelines and will educate staff accordingly.	EC expects that the GNWT-ENR will provide expert advice and feedback on commitments and mitigation measures for wildlife species, including species at risk, that are under territorial management (e.g. caribou, grizzly, wolverine, Peregrine Falcon, Short-eared Owl, Rusty Blackbird).
The Developer's contractor(s) will be responsible for educating and training staff on applicable practices contained within the Wildlife Management Plans and the Bear Safety Guidelines, including the proper use of non-lethal wildlife deterrent materials (e.g., bear spray).	A tracking system is needed to ensure that contractors are providing education and training and provide evidence of such to regulators and in monitoring reports
Camps and associated infrastructure will be designed to incorporate features that ensure safety for both personnel and wildlife, including installing adequate lighting, implementing proper waste management, cleaning and maintaining the kitchen and dining area, and implementing appropriate wildlife detection and deterrent strategies.	Ensure that specifics of infrastructure design are included in the Wildlife Management Plan as well as detection and deterrent strategies to be used
Pre-disturbance surveys for critical habitat features (e.g., dens, nests) will be conducted prior to construction, in cooperation with GNWT ENR, as required.	EC expects that the GNWT-ENR will provide expert advice and feedback on commitments and mitigation measures for wildlife species, including species at risk, that are under territorial management (e.g. caribou, grizzly, wolverine, Peregrine Falcon, Short-eared Owl, Rusty Blackbird). Results of such surveys should be included in

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
	monitoring reports, EC should be included as a recipient of such reports
All wildlife encounters and mortalities will be reported to the environmental monitor, Safety Advisor, and GNWT ENR	Encounters and mortalities should be included in an annual monitoring report to be shared with regulators (including EC) and other interested parties
The Developer will implement general wildlife protection measures along the proposed Highway as follows: -Minimizing loss of habitat and the reduction of habitat effectiveness through Project design; -Educating users of the Highway that wildlife have the right-of-way at all times; -Posting signage along the Highway, emphasizing areas of high wildlife use; -Implementing a policy whereby Project personnel and contractors will not disturb any wildlife or critical habitat features such as dens or nests; -Implementing a system during the construction phase that serves to notify workers of wildlife presence in or near construction areas; -Hiring environmental monitors to during construction to watch for wildlife; -Adhering to spill contingency plans, as required, in a timely manner; -Conducting follow-up monitoring of spill sites to verify effectiveness; -Utilizing clean equipment, particularly when deployed in or near water; -Implementing appropriate dust control measures to minimize effects to habitat and forage quality; -Adhering to waste management plans and procedures to avoid attracting wildlife; -Timing construction activities to avoid critical periods; -Applying and conforming with pre-determined setback distances from key wildlife habitat features; -Implementing a “no hunting” policy for Highway construction and maintenance workers; and -Working with agencies such as the HTCs, WMAC and GNWT ENR to develop guidelines	-Wildlife and habitat features such as dens or nests that are detected during pre-construction or operations should be documented and reported, including any mitigative measures used to reduce impacts and their effectiveness - Records should be kept of any wildlife notifications and included in monitoring reports -Provide details on how equipment will be monitored for cleanliness -Provide details on how effectiveness of dust control will be monitored and how impacts to habitat and forage quality will be monitored in the WMP -Provide details of how waste management practices will be audited to ensure adherence to waste management plan -Critical periods for different wildlife species should be specified in the Wildlife Management Plan - Provide recommended setbacks in WMP and report on setbacks used when needed -Add EC to the list of agencies to be consulted in the development of such guidelines

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
and conditions for Highway usage and follow-up with monitoring of harvesting activities.	
Types of Mitigation for Caribou	
Types of mitigation measures that the Developer will integrate into the Project design, construction, and anticipated future operational practices to reduce or minimize potential impacts of the proposed Highway on caribou are: -Limiting blasting activities, if required, to borrow sites and will only occur when caribou are >500 m from the blast site; -Working with agencies such as the HTCs, WMAC, and GNWT ENR to develop guidelines for periodic Highway closures, if required, as a way of minimizing the disruption of migration patterns to barren-ground caribou; -All sightings of caribou will be reported to environmental staff on-site; -Maintaining a minimum distance of 500 m between field operations and caribou for the duration of construction; -Caribou sightings will be recorded (including a GPS location if possible) and be submitted to the GNWT DOT Planning, Policy and Environmental Division and GNWT ENR upon completion of construction; and -Caribou crossing signs will be placed along the Highway, as needed.	EC expects that the GNWT-ENR will provide expert advice and feedback on commitments and mitigation measures for wildlife species, including species at risk, that are under territorial management (e.g. caribou, grizzly, wolverine, Peregrine Falcon, Short-eared Owl, Rusty Blackbird).
Types of Mitigation Measures for Grizzly Bears and Furbearers	
Types of mitigation measures that the Developer will integrate into the Project design, construction, and anticipated future operational practices to reduce or minimize potential impacts of the proposed Highway on grizzly bears and furbearers include: -Freshly dug dens will be mapped such that construction activities will avoid active dens during the hibernation period; -If possible, no activities will occur within 500 m of an active den during the denning period (October to April); and -No blasting will occur if active bear dens are confirmed within 500 m of a proposed blasting are	EC expects that the GNWT-ENR will provide expert advice and feedback on commitments and mitigation measures for wildlife species, including species at risk, that are under territorial management (e.g. caribou, grizzly, wolverine, Peregrine Falcon, Short-eared Owl, Rusty Blackbird).

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
Maintaining a minimum distance of 500 m between identified grizzly bear/wolverine den sites and personnel during construction; -Dens (grizzly bear, wolverine) discovered within 500 m of the Highway after the pre-construction survey will be reported immediately to GNWT ENR to determine the appropriate course of action; -Providing the wildlife monitor and designated, trained staff access to non-lethal deterrent materials (e.g., bear spray). The use of any deterrent method on wildlife will be reported to GNWT ENR; -Minimizing and properly disposing of wildlife attractants such as garbage, food wastes, and other edible and aromatic substances; -Storing all food, grease, oils, fuels, and garbage in bear/wolverine-proof containers and/or areas; -No waste will be incinerated on-or off-site; and -Transporting waste to Tuktoyaktuk and/or Inuvik municipal solid waste facilities for disposal. Disposal of wastes at these facilities will follow the specified terms and conditions for use.	
Types of Mitigation Measures for Birds	
Types of mitigation measures that the Developer will integrate into the Project design, construction, and anticipated future operational practices to reduce or minimize potential impacts of the proposed Highway on birds include: -Conducting pre-disturbance bird nest surveys in June-July to document use by nesting birds;	-The dates for conducting pre-disturbance nest surveys should be extended. In the southern Arctic region of the Northwest Territories and Nunavut, migratory birds may be found incubating eggs from May 14 until July 30, and young birds can be present in the nest until September 12. Revise dates for nest surveys to May-September.
-Avoiding conducting Project activities within 500 m of an active raptor nest during nesting season;	-EC expects that the GNWT-ENR will provide expert advice and feedback on commitments and mitigation measures for wildlife species, including species at risk, that are under territorial management (e.g. caribou, grizzly, wolverine, Peregrine Falcon, Short-eared Owl, Rusty Blackbird).
-Designing structures in a way that limits or	-Details of structure design should be include in the

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
prevents their potential use as nesting structures; and -Allowing nesting birds who have utilized structures to remain in place.	Wildlife Management Plan -Measures to reduce disturbance to any nesting birds should be documented in monitoring reports
Types of Mitigation Measures for Peregrine Falcons	
The Developer will incorporate the following mitigation measures for Peregrine Falcons including: -Lights will be positioned to shine down or will be fixed with shielding to direct light downward on buildings and other infrastructure sites, wherever possible; -Lighting will be switched off, whenever possible (i.e., when camps and facilities are not in use); -Conducting an aerial survey of the final alignment and borrow sources to identify areas where Peregrine Falcons could be nesting that may require mitigation; and -Appropriate federal (CWS) and territorial (GNWT ENR) authorities will be contacted immediately before continuing work if a Peregrine Falcon nest is identified within predetermined set-back distances (as determined through consultation with CWS/ENR).	EC expects that the GNWT-ENR will provide expert advice and feedback on commitments and mitigation measures for wildlife species, including species at risk, that are under territorial management (e.g. caribou, grizzly, wolverine, Peregrine Falcon, Short-eared Owl, Rusty Blackbird). - GNWT ENR should be the primary contact for advice on measures to mitigate disturbance to Peregrine Falcon
Types of Mitigation Measures for Bird Species At Risk	
The Developer will incorporate additional mitigation measures for bird Species at Risk including: -Immediately contacting appropriate federal (CWS) and territorial (GNWT ENR) authorities if a nest of a key bird species is identified within predetermined set-back distances (as determined through consultation with CWS/ENR).	- Observations of species at risk that occur outside of predetermined setbacks should also be noted and recorded by wildlife monitors and included in monitoring reports.
WASTE MANAGEMENT	
The Developer will develop a waste management plan for all wastes associated with pre-construction and construction activities. The waste management plan will apply to the Developer and all associated Project contractors involved in the generation, treatment, transferring, receiving, and disposal of waste materials for the Project.	EC will review this plan

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
The Developer commits to the following steps prior to disposal of waste: -Obtaining approval from the Town of Inuvik and Hamlet of Tuktoyaktuk to use their sewage lagoon and solid waste disposal facilities; -Providing an estimate of the amount and type of domestic waste generated by the Project compared to the facility's available capacity; -Following all applicable Licence, Permits, and/or municipal bylaws regarding the use of the facility in Inuvik and Tuktoyaktuk; and -Recording the amount of domestic waste shipped to the landfills.	EC has developed a *Technical Document for Batch Waste Incineration*. The technical document provides information on appropriate incineration technologies, best management and operational practices, monitoring and reporting and can be found at the following web link: http://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=5F6E5596-1 Should the Developer choose to use incineration as a method for waste management the Developer should develop an incineration management plan in consultation with EC and GNWT's Department of Environment and Natural Resources that is consistent with the *Technical Document for Batch Waste Incineration*. The management plan should include an annual report to provide details on, but not limited to, the following: • Incineration technology selected; • Waste audit -- amount and types of waste incinerated; • Operational and maintenance records; • Operator training; • Emission measurements; and • Incineration ash disposal.
The Developer will develop and implement a hazardous waste management plan (HWMP). The HWMP will encompass all pre-construction and construction phases of the Project and will apply to the Developer and all Project contractors involved in receiving, transferring, and transporting hazardous waste for the Developer's activities on land, water, and air.	No additional comments at this time.
FUEL MANAGEMENT	
The Developer commits to storing fuel used for borrow source and Highway construction activities in double-walled fuel storage tanks, and in accordance with CCME guidelines.	Please note the new CEPA *Storage Tank System for Petroleum Products and Allied Petroleum Products Regulations* that came into force on June 12, 2008. These regulations apply to both outside, aboveground and underground storage tank systems (including the piping and other tank associated equipment) under federal jurisdiction containing petroleum and allied petroleum products that have a capacity greater than 230 litres. This includes tanks located on federal or Aboriginal lands. Exceptions are pressurized tanks, mobile tanks, tanks regulated by the National Energy Board, and outdoor, aboveground storage tank systems that have a total combined capacity of

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
	2500 litres or less and are connected to a heating appliance or emergency generator. All storage tank system owners must identify their tank systems to EC and installation of new systems must comply with the regulation's design requirements. Further information on these regulations can be found at www.ec.gc.ca/st-rs.
All vehicles and equipment will be refueled at least 100 m from water bodies following INAC (DIAND) fuel storage guidelines.	No additional comments at this time.
WATER QUALITY AND QUANTITY	
The Developer will ensure that the DFO water withdrawal protocol criteria are followed.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer is committed to carrying out bathymetric surveys on all lakes proposed for water extraction.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will minimize effects to water quality and quantity as a result of Highway design through the design and use of crossing structures that are appropriate for site-specific flow conditions; by employing erosion and sediment control best management practices and DFO *Operational Statements* (where possible) as per approved Environmental Management Plans; installing appropriately sized culverts to divert and manage Highway and surface drainage flows; and undertaking primary Highway embankment construction activities during the winter months.	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. EC looks forward to reviewing the erosion and sediment control best practices.
The Developer is committed to completing hydrological assessments prior to bridge design to determine suitable span widths and abutment placement.	No additional comments at this time.
During the bridge design of the Project, should individual site-specific circumstances preclude complete adherence to the DFO *Operational Statements*, the Developer will consult with DFO in advance to discuss and approve of proposed plans.	No additional comments at this time.
Some of the mitigation measures for water quality and quantity effects the Developer will follow include: -Limiting the use of construction equipment to the immediate footprint of the Highway or borrow source;	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance.

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
-Minimizing vegetation removal and conducting progressive reclamation at the clear-span abutments, culvert installations, and borrow sources; -Keeping ice bridge and ice road surfaces free from soils and fine gravel that may be tracked out by vehicles; -Avoiding the use of heavy equipment in streams or on stream banks during summer months, and the adherence to the DFO *Operational Statement for Temporary Stream Crossings* (DFO 2008), where this is deemed necessary; -Implementing the erosion and sediment control plan to be developed as part of the overall EMP; -Appropriately sizing and installing culverts based on hydrological assessments and local experience, to avoid backwatering and washouts. -Completing Highway embankment construction during winter months; -Adhering to the DFO *Operational Statement for Clear-Span Bridges* for all applicable activities; -Implementing appropriate dust control measures to minimize effects to waterbodies and aquatic habitat; -Following the DFO *Operational Statement for Culvert Maintenance* (DFO 2010) where necessary; -Maintaining equipment away from waterbodies; and -Adhering to spill contingency plans, as required, in a timely manner	EC looks forward to reviewing a consolidated sediment and erosion control plan.
STREAM CROSSINGS	
The Developer (under appropriate seasonal conditions), will conduct further assessments of the proposed water crossing locations and will provide information about watercourse characteristics and proposed crossing structure designs sufficient to meet the requirements of the Northwest Territories Waters Regulations.	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. EC looks forward to reviewing a consolidated sediment and erosion control plan.
The Developer is committed to working closely with DFO to design appropriate crossing structures for each stream and to obtain Fisheries Authorizations, if determined to be required.	Did not review - Outside of Environment Canada's mandated responsibilities

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
The Developer will install culverts according to established guidelines and will follow culvert installation guidelines such as those contained within the DFO Land Development Guidelines (1993) and the INAC Northern Land Use Guidelines for Roads and Trails (INAC 2010).	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. EC looks forward to reviewing a consolidated sediment and erosion control plan.
The Developer will install appropriately sized culverts to minimize changes in water flow pattern and timing.	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. EC looks forward to reviewing a consolidated sediment and erosion control plan.
The Developer will not install culverts in critical aquatic habitats.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will carry out routine monitoring and inspections at watercourse crossings and culverts, including reporting on culvert performance and maintenance requirements.	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. EC looks forward to reviewing a consolidated sediment and erosion control plan.
The Developer will ensure that maintenance requirements for culverts will adhere to the DFO Culvert Maintenance Operational Statement.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will ensure that when crossings are completed, disturbed materials will be replaced with similar-sized substrates and the bed and banks of the watercourse are stabilized and restored.	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. EC looks forward to reviewing a consolidated sediment and erosion control plan.
VEGETATION	
The Developer commits to surveying borrow sources prior to construction for the presence of Yukon stitchwort and other rare plant species. Should rare plants be identified, they	Did not review - Outside of Environment Canada's mandated responsibilities

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
will be avoided where possible. If avoidance is not an option specimens will be collected, transferred to another suitable location, and/or donated to local herbaria for educational purposes.	
The Developer commits to minimize direct effects to vegetation cover by limiting construction activities, to the extent possible, to the planned footprint of the Highway.	Did not review - Outside of Environment Canada's mandated responsibilities
Surveys ahead of construction in the vicinity of Holmes Creek and Hans Creek will be carried out to verify the location of the road alignment and stream crossings with respect to the unique Riparian Black Spruce/Shrub vegetation type.	Did not review - Outside of Environment Canada's mandated responsibilities
Controlling the effects of dust during construction and operation of the Highway will include applying water as needed, as per the *GNWT Guideline for Dust Suppression* (GNWT 1998).	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer commits to using appropriate northern, native plant species for any deliberate re-vegetation efforts of borrow sources.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer or contractor(s) will apply strategies for mitigating potential effects to the vegetation types in the vicinity of the Highway and associated borrow operations such as: -Restricting off-site activities (e.g., ATV use) to the footprint area; -Ensuring machinery and equipment is clean prior to use on site; -Periodically monitoring roadsides for invasive species establishment; -Designing and engineering roadbed and drainage structures appropriately to accommodate unique environmental conditions; and -Containing and cleaning-up spills immediately in accordance with the spill contingency plans.	Did not review - Outside of Environment Canada's mandated responsibilities
AIR QUALITY	
The Developer will conform with applicable ambient air quality objectives by using pollution prevention measures and best management practices.	No additional comments at this time.
Mitigation measures for air quality during the construction phase will include: -Applying water as per the GNWT's *Guideline for Dust Suppression* (GNWT 1998) during	Should incineration be used as a method of waste management, the Developer should develop an incineration management plan in consultation with EC and GNWT's Department of Environment and

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
summer months; -To the extent possible, aggregate stockpiling activities will be conducted well downwind of potentially sensitive receptors (based on prevailing winds); -Closing and progressively reclaiming borrow pits as soon as they are no longer required to reduce potential fugitive dust; -Ensuring proper maintenance of heavy equipment to minimize air emissions; and -Restricting speed limits along the access roads and Highway during construction to minimize dust production.	Natural Resources that is consistent with the *Technical Document for Batch Waste Incineration*. The management plan should include an annual report to provide details on, but not limited to, the following: • Incineration technology selected; • Waste audit -- amount and types of waste incinerated; • Operational and maintenance records; • Operator training; • Emission measurements; and • Incineration ash disposal.
The Developer will be responsible for the ongoing maintenance of the Highway during the operations phase and will conform to the GNWT's *Guideline for Dust Suppression* (GNWT 1998).	No additional comments at this time.
LAND USE	
The Developer will implement mitigation measures to minimize potential land use effects such as: -Ensuring that construction vehicles stay on access roads or the construction site at all times; and -Prohibiting the recreational use of the Highway by Project staff during construction, including the use of ATVs and snow machines.	Did not review - Outside of Environment Canada's mandated responsibilities
During the operations phase, the Developer will work with appropriate parties to install signage and/or develop educational materials to encourage users to stay on the Highway and not adjacent areas.	Did not review - Outside of Environment Canada's mandated responsibilities
NOISE	
The Developer will consult with wildlife experts to minimize noise effects on wildlife, particularly blasting activities.	If required, EC will provide available advice to the Developer for reducing noise effects to migratory bird species EC expects that the GNWT-ENR will provide expert advice and feedback on commitments and mitigation measures for wildlife species, including species at risk, that are under territorial management (e.g. caribou, grizzly, wolverine, Peregrine Falcon, Short-eared Owl, Rusty Blackbird).

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
The Developer will use appropriate design, scheduling, logistics, and maintenance measures to reduce the effects of noise.	Did not review - Outside of Environment Canada's mandated responsibilities
Project contractors will be directed to apply reasonable mitigation measures to reduce possible effects associated with construction noise, including adequate maintenance of construction equipment and provision of appropriate mufflers for all internal combustion engines.	Did not review - Outside of Environment Canada's mandated responsibilities
Blasting activities, if required, will be timed to avoid periods when sensitive wildlife species are in the area.	Periods when sensitive wildlife species are likely to be in the project area should be specified in the Wildlife Management Plan
ARCHAEOLOGY	
The Developer will hire a qualified archaeologist to perform an Archaeological Impact Assessment within a 100 m wide corridor along the alignment and all associated components such as borrow source access roads, work staging areas, and construction camps.	Did not review - Outside of Environment Canada's mandated responsibilities
Mitigation measures for archaeological sites at risk of impact from the development will be designed on an individual basis, and require approval by the Prince of Wales Northern Heritage Centre.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will, on recommendation from the contract archaeologist or Prince of Wales Northern Heritage Centre, implement avoidance or mitigation measures to protect archaeological sites or to salvage the information they contain through excavation, analysis, and report writing.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer will prepare an archaeological site(s) protection plan to facilitate the continued protection and management of archaeological resources during the construction phase of the Project.	Did not review - Outside of Environment Canada's mandated responsibilities
The Developer and its Project contractors will make every effort to avoid and protect recorded and unrecorded archaeological and heritage resources in accordance with the terms and conditions of the Northwest Territories archaeological regulations during the Project.	Did not review - Outside of Environment Canada's mandated responsibilities
MONITORING	

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
The Developer requires that Project contractors employ an adaptive management approach to ensuring sensitive species/ species at risk are adequately protected during all phases of construction.	This commitment places the onus for protection of species at risk and sensitive species on Project contractors. The Wildlife Management Plan should outline what mitigations measures should be used by contractors, specify the triggers for adaptive management, and outline what parameters need to be monitored to evaluate if mitigation and adaptive management are successful in achieving the stated goal. Monitoring reports should demonstrate how the Developer has ensured such an adaptive management approach is being implemented by contractors.
The Developer is committed to hiring environmental monitors to ensure the application of prescribed mitigation, identify unforeseen and potential erosion sites that could lead to the discharge of sediment to surface or groundwater, and prevent erosion and subsequent sedimentation.	Erosion and sediment control measures are required to ensure soil, silt or sediment-laden water does not enter surface waters including river, creek, ditch or waterbody because it can adversely impact aquatic ecosystems. Section 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious substance. EC looks forward to reviewing a consolidated sediment and erosion control plan.
Compliance and effects monitoring activities will be conducted to ensure the terms and conditions set out in regulatory approvals, licences and permits, the EMP, and in the commitments are met, and to check the effectiveness of mitigation measures in avoiding or minimizing potential effects.	No additional comments at this time.
The Developer will prepare an effects monitoring table and an inspection table prior to construction. The effects monitoring table will describe the indicators and parameters to be monitored and the target or management goal. The inspections table will describe the types of inspections required, the frequency of the inspections, and which phase of the Project the inspection will occur.	No additional comments at this time.
Environmental and wildlife monitoring will be carried out by third party monitors supplied by the ILA (environmental monitors) and the HTC (wildlife monitors), and will be funded by the Developer and/or Developer's contractor(s).	No additional comments at this time.
The Developer will conduct post-construction monitoring according to the extent, frequency and duration required by regulators to evaluate the success of mitigation measures and to identify required modifications, repairs, or maintenance.	No additional comments at this time.

TABLE F: SUMMARY OF DEVELOPER COMMITMENTS WITH ENVIRONMENT CANADA IR RESPONSES	
Developer Commitments	**Environment Canada IR Response**
The Developer will require that Project contractors work closely with the environmental and wildlife monitors during construction.	No additional comments at this time.
The Developer is committed to participating with other parties in a cumulative effects monitoring program.	No additional comments at this time.

5.2 APPENDIX A: RELEVANT LEGISLATION, POLICIES AND GUIDELINES

The following summaries have been prepared for ease of reference and convenience only. For purposes of reliability and accuracy, and for interpreting and applying the Act, regulation or policy, it is recommended that the reader review the original document itself, including any subsequent amendments.

Canadian Environmental Protection Act, 1999

Proclaimed on March 31, 2000, the *Canadian Environmental Protection Act, 1999* (CEPA) is an Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development. CEPA shifts the focus away from managing pollution after it has been created to preventing pollution. The Act provides the federal government with tools to protect the environment and human health, establishes strict deadlines for controlling certain toxic substances, and requires the virtual elimination of toxic substances which are bioaccumulative, persistent and result primarily from human activity.

For substances that are declared "toxic" under CEPA and are added to the List of Toxic substance in Schedule 1 of the Act, instruments will be proposed to establish preventive or control actions for managing the substance and thereby reduce or eliminate its release into the environment. These tools may be used to control any aspect of the substance's life cycle, from the design and development stage to its manufacture, use, storage, transport and ultimate disposal.

Examples of preventive and control instruments include:

- Regulations;
- Pollution prevention plans;
- Environmental emergency plans;
- Environmental codes of practice;
- Environmental release guidelines; and
- Pre-notification and assessment of new substances (chemicals, biochemicals, polymers, biopolymers, and animate products of biotechnology).

➢ ***Environmental Emergency Regulations under CEPA***

Authority to require emergency plans for toxic or other hazardous substances is provided in Part 8 of CEPA. The *Environmental Emergency Regulations* require those who own or manage toxic and hazardous substances specified in a list of substances under CEPA, at or above the specified thresholds, to provide required information on the substance(s), their quantities and to prepare and implement environmental emergency plans. Environmental emergency plans for such a substance(s) must cover prevention, preparedness, response and recovery.

➢ ***Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations under CEPA***

These regulations came into force on June 12, 2008. The main objective of the new regulations is to prevent soil and groundwater contamination from storage tank systems located on federal and Aboriginal lands. The regulations cover tanks storing petroleum products and allied petroleum products, and compliance with these regulations is mandatory. For additional detail and 'tank tips' please refer to: www.ec.gc.ca/st-rs.

Pollution Prevention Provisions of the *Fisheries Act*

The Minister of Fisheries and Oceans is legally responsible to Parliament for administration and enforcement of all sections of the *Fisheries Act*. However, under a Prime Ministerial Instruction (1978) and a Memorandum of Understanding (1985), EC administers and enforces those aspects of the *Fisheries Act* dealing with the prevention and control of pollutants affecting fish. In this context, EC works to:

- Advance pollution prevention technologies;
- Promote the development of preventative solutions; and
- Work with the provinces, territories, industry, other government departments and the public on issues relating to the pollution provisions of the *Fisheries Act.*

The main pollution prevention provision is found in section 36(3) of the Act, and is commonly referred to as the "general prohibition". This section prohibits the deposit, into fish-frequented waters, of substances that are deleterious to fish. The legal definition of "deleterious substance" provided in section 34(1) of the *Fisheries Act*, in conjunction with court rulings, provides a very broad interpretation of deleterious and includes any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat.

Migratory Birds Convention Act

The Migratory Birds Convention, between Canada and the United States, provides for the cooperative management of shared migratory birds populations on a continental basis. The Parties agree to manage migratory bird populations in accord with the following conservation principles:

- Manage migratory birds internationally;
- Ensure a variety of sustainable uses;
- Sustain healthy migratory bird populations for harvesting needs;
- Provide for and protect habitat necessary for the conservation of migratory birds; and
- Restore depleted populations of migratory birds.

Within Canada, the Migratory Birds Convention is implemented through the *Migratory Birds Convention Act* (MBCA) and its Regulations. The MBCA provides for the protection of migratory birds and nests and for the creation of protected areas for migratory birds and the control and management of those areas. The *Migratory Birds Regulations* (MBR) address the harvest and possession of migratory birds. Section 6(a) of the MBR prohibits the disturbance, destruction, taking of a nest, egg, or nest shelter of a migratory bird or to be in possession of the above, except under the authority of a permit. Section 5.1 of the MBCA prohibits persons from depositing substances harmful to migratory birds in waters or areas frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

Species at Risk Act

The *Species at Risk Act* (SARA) is intended to prevent endangered or threatened species or subspecies from becoming extinct or lost from the wild as a result of human activity and to help in the recovery of these species. It is also intended to manage species of special concern and to prevent them from becoming endangered or threatened. Most of SARA came into force in June 2003. The prohibition provisions came into force in June 2004.

With respect to species at risk, SARA provides for:

- Status assessment and legal listing (Schedule 1);
- Preparation of recovery strategies and action plans;
- Protection of critical habitat; and
- Management plans to prevent further endangerment.

SARA includes general prohibitions against the:

- killing, harming, harassing of listed extirpated, threatened or endangered species or their residences;
- damage or destruction of the residences of individuals of an endangered or threatened species, or of an extirpated species where its reintroduction into the wild has been recommended; and
- destruction of critical habitat of an extirpated, threatened or endangered species, as defined in a recovery strategy or action plan.

How and when these prohibitions apply will depend on the type of species (e.g. aquatic species, migratory bird), its status designation (e.g., threatened, endangered) and where it is located (e.g., lands under the authority of the Minister of the Environment or the Parks Canada Agency, other federal lands).

SARA also requires that federal environmental assessments incorporate assessments of species at risk into reviews and that attention be paid to mitigation and monitoring of affected species.

Canadian Council of Ministers of the Environment Canada-wide Standards

The Canada-wide Environmental Standards Sub-agreement is a framework for federal, provincial, and territorial Environment Ministers to work together to address key environmental protection and health risk reduction issues that require common environmental standards across the country. Set under the framework of the Canada-wide Accord on Environmental Harmonization, the standards sub-agreement sets out principles for governments to jointly agree on priorities, to develop standards, and to prepare complementary work plans to achieve those standards, based on the unique responsibilities and legislation of each government. The sub-agreement does not change the jurisdiction of governments nor does it delegate authority.

A defining characteristic of the Canada-wide standard process is the accountability of each jurisdiction to ensure the implementation of approved Canada-wide standards. Section 6 of the Canada-wide Standards Sub-agreement, sets out requirements and suggestions regarding implementation, with the objective of ensuring co-operative, effective, accountable and consistent implementation of each standard.

- ***Canada-wide Standards for Mercury Emissions***

Mercury is a naturally occurring substance, which is transformed through biological processes to methyl mercury, a persistent substance which bioaccumulates in the food chain and is particularly toxic to humans and wildlife. Mercury levels originate from a combination of naturally-occurring mercury and anthropogenically emitted mercury. Levels in any one region reflect variable combinations of local, regional and even global sources. Approximately sixty percent of the mercury entering the ecosystem is from anthropogenic sources.

Recognizing the hazard posed by anthropogenically emitted mercury entering the food chain, the CCME ministers agreed in June 2000 to the Canada-wide Standards for Mercury Emissions. The CWS set limits for mercury emissions from several sectors, including incinerators. For more information: http://www.ccme.ca/assets/pdf/mercury_emis_std_e1.pdf

- ***Canada-wide Standards for Dioxins and Furans***

Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), commonly known as dioxins and furans, are toxic, persistent, bioaccumulative, and result predominantly from human activity. Due to their extraordinary environmental persistence and capacity to accumulate in biological tissues, dioxins and furans are slated for virtual elimination under CEPA, the federal *Toxic Substances Management Policy* and the CCME *Policy for the Management of Toxic Substances*.

Recognizing the hazard posed by dioxins and furans entering the environment, the CCME ministers agreed, in May 2001, to the Canada-wide Standards for Dioxins and Furans. These standards set limits for dioxin and furan emissions from several sectors including incinerators. For more information: http://www.ccme.ca/assets/pdf/d_and_f_standard_e.pdf